

# 12 Volt Conversion Page

I have recently converted my 1952 Ford 8N over to a 12 Volt Negative ground system. The conversion is easy to do, and charges the battery and runs electrical accessories (like lights) much more dependably than the old 6 Volt Positive ground system. Another advantage is quicker and easier starting, plus the fact that you can jump start the tractor just like any other vehicle should the battery go dead.

Materials you will need for the conversion include:

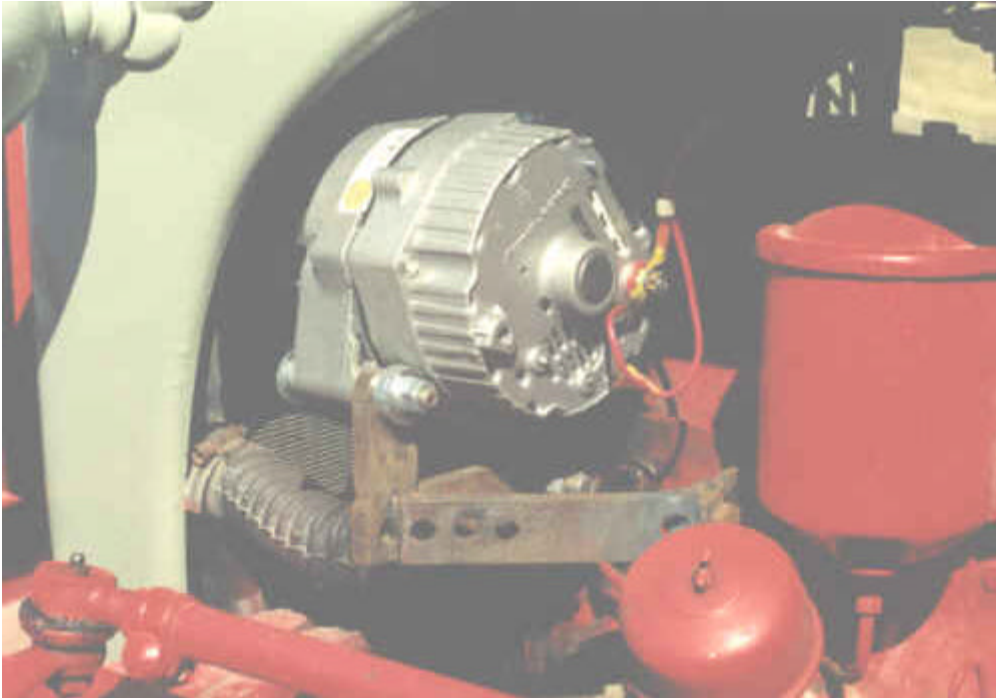
- ⚡ Alternator
- ⚡ Alternator bracket (pre-fabricated or make your own)
- ⚡ 12 Volt battery
- ⚡ 10 and 12 gauge wire, and various crimp-on connectors
- ⚡ Side Marker Lamp, which uses a #194 (or #193) bulb (look for the 2 wire type)
- ⚡ RU-100 voltage reducer, or replace the original coil with a 12 volt compatible coil
- ⚡ 12 volt bulbs to replace the original 6 volt lighting
- ⚡ Elbow grease :-)



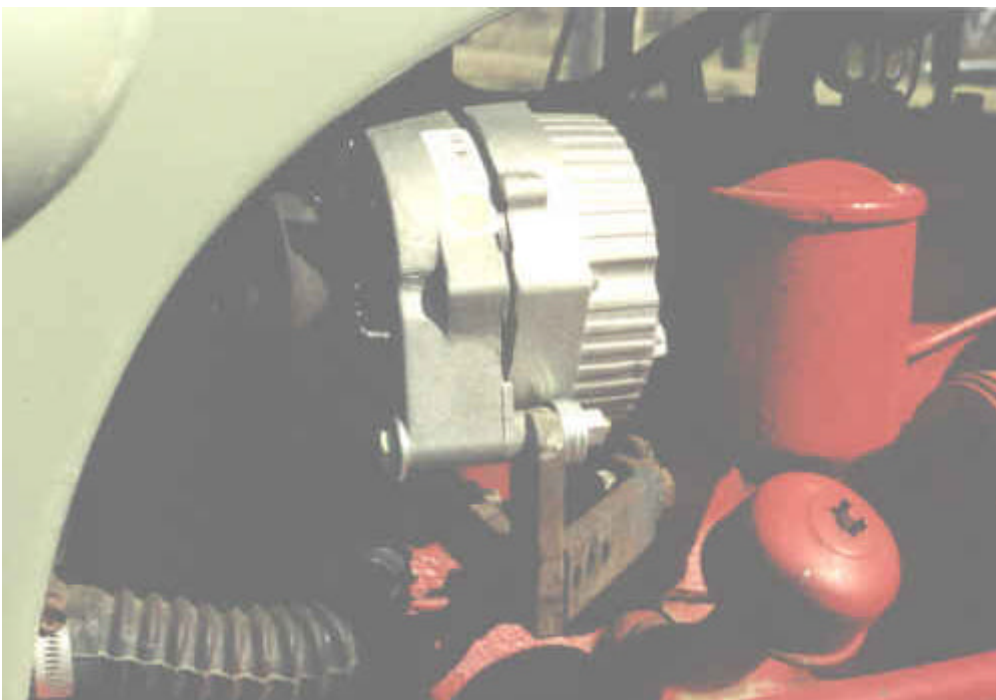
For the conversion, I used the AC-Delco 10SI alternator. These were used on virtually every General Motors vehicle produced in the 1970's and early 80's, so they are about as common as dirt, and nearly as cheap (my new rebuilt unit cost 39.95 at AutoZone). The part number will very likely have the number 7127 in it somewhere. Just ask for an alternator for a 1978 Chevy pickup truck. This alternator features an internal voltage regulator, so installation is relatively simple. These alternators come in a variety of amperage ratings, but anything over 40 amps will do just fine. My particular alternator is rated for 55 amps, which is more than enough capacity to charge the battery and run the headlights. There is enough extra capacity to also run a handheld spotlight or an electric spreader or even an electric sprayer. Try that

with the old 6 volt system!! The 12 Volt conversion adds versatility to the old 8N!!

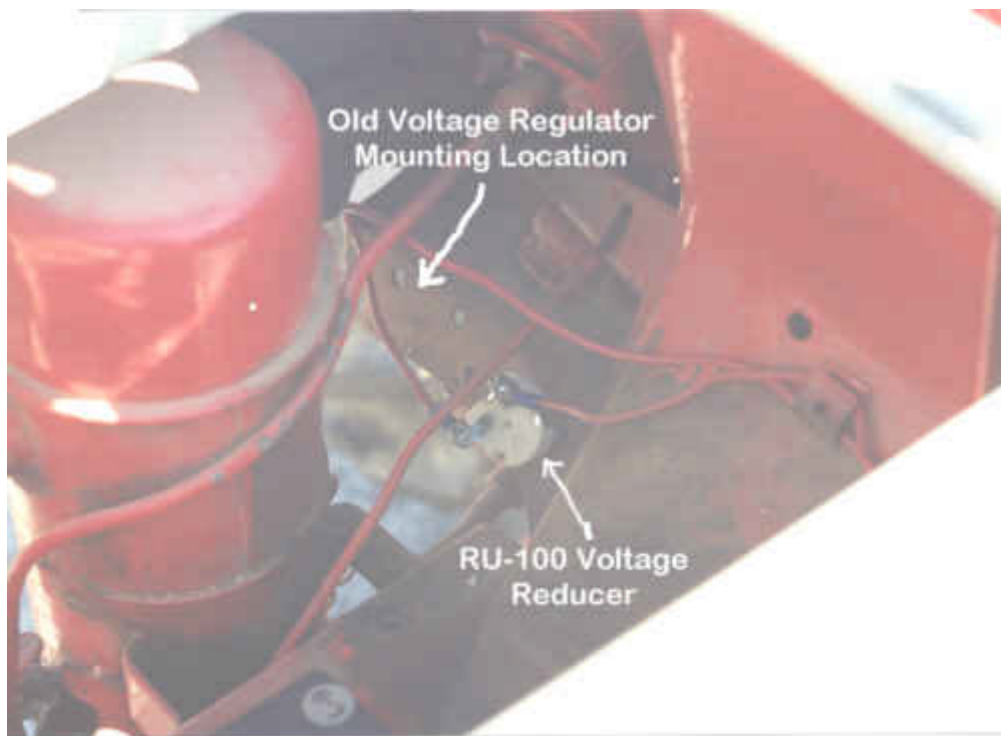
There are 2 ways to obtain the materials needed to do the conversion. One way is to buy a "12 Volt Conversion Kit" sold at various places such as [Genesee Products](#). The advantage of the kit is that it usually has everything you need to do the conversion except for the battery and 12 volt bulbs, and sometimes the alternator bracket. The disadvantage is price. The complete kits usually retail for around \$150 dollars and up and you still have to go out and buy a battery and replacement bulbs. The other way is to obtain all the parts yourself. This is what I did, and I got everything I needed (including the battery and replacement 12 volt headlamps and rear worklamp) for about \$125. That's a savings of almost \$75.



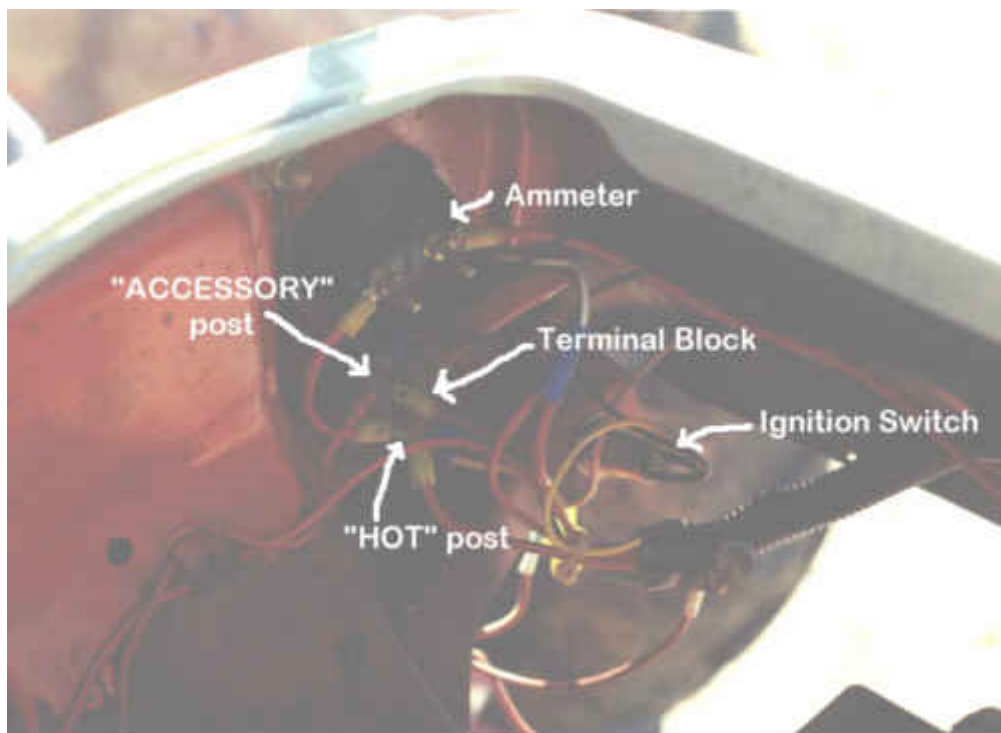
To start the conversion of your tractor, begin by removing the old generator and the generator cradle from the engine. Leave the bracket that bolts to the engine block in place. Store these away somewhere just in case the unlikely time may come when you would want to convert back to the original 6 volt system (such as a show quality restoration.)



Next remove all of the original wiring from the tractor. Since the original electrical system is at least 48 years old, the plastic insulation may have become brittle and cracked. It's time to retire it!



Once you have all the wiring removed, it's time to remove the old 6 volt voltage regulator. Since the new alternator has its own internal regulator, removing the old one will free up some space under the hood for some accessories like a fuse block and also gives a convenient place to mount the RU-100 resistor. The RU-100 drops the 12 volt current down to about 6 volts, allowing you to retain the original 6 volt coil without burning up the points or the coil.



Now that the old electrical system has been removed, it's time to start putting it all back together again. Begin by installing the alternator bracket and mounting the alternator (see pictures above for ideas how to fabricate the bracket. I made mine from scrap steel I had lying in the junk pile outside the shop. See, there is NO SUCH THING as Junk!!! :-). Be sure that the alternator pulley and the water pump pulley align properly when you install the alternator on your bracket. Don't worry about the fan belt being larger than the pulley on the alternator. As long as it is properly aligned with the other pulleys, it will work just fine.

Once the alternator is installed and properly aligned, and the RU-100 is installed, you can begin re-wiring the electrical system. This is the fun part!

## Wiring Diagrams

### *Wiring up the 12 Volt Conversion in 22 Easy Steps*

1. Run a 12 guage wire from the BAT terminal on the alternator to the P2 terminal on the alternator.



- Use a female spade connector to attach to P2.
2. Run a 10 guage wire (using appropriately sized eye connectors) from the BAT terminal on the alternator to the "HOT" terminal on the terminal block. The terminal block has 2 posts, either of which can be designated the "HOT" post. The remaining post is designated the "ACCESSORY" post.
  3. Run a 10 guage wire from the "HOT" terminal on the terminal block to the "-" terminal on the ammeter.
  4. Run a 10 guage wire from the "+" terminal on the ammeter to the main terminal on the Starter Solenoid.
  5. Attach the "Bat" lead from the ignition switch to the "HOT" post of the terminal block.
  6. Run a 12 guage wire from the "HOT" post on the terminal block to the Headlight Switch.
  7. Tighten all connectors down securely on the "HOT" post of the terminal block.
  8. Attach the "IGN" lead from the ignition switch to the "ACCESSORY" post on the terminal block.
  9. Run a 12 guage wire from the "ACCESSORY" post on the terminal block to one lead on the Side Marker Lamp.
  10. Run a 12 guage wire from the P1 terminal on the alternator to the remaining lead on the Side Marker Lamp.
  11. Run a 12 guage wire from the "ACCESSORY" post on the terminal block to one of the terminals on the RU-100 voltage reducer (or the appropriate ballast resistor if you are using a new 12 volt coil).
  12. Run a 12 guage wire from the remaining terminal on the RU-100 (or appropriate resistor) to the "+" terminal on the coil.
  13. Run a 12 guage wire from the "-" terminal on the coil to the points terminal on the distributor (if you removed the old wire).
  14. Tighten all connectors down securely on the "ACCESSORY" post on the terminal block.
  15. Replace any 6 volt light bulbs with new 12 volt bulbs.
  16. Clean old battery cables or replace with new ones if necessary.
  17. Install new 12 volt battery in battery box, and tie it down properly.
  18. This step **MUST BE FOLLOWED EXACTLY!!** Attach the battery cable that connects to the tractor frame to the "-" terminal on the battery. Attach the cable that connects to the starter solenoid to the "+" terminal on the battery. This is reversed from the original battery hookup, which was positive ground. Your new 12 volt conversion **MUST BE WIRED AS NEGATIVE GROUND!!!!** Attaching the "+" battery terminal to the tractor frame will **FRY THE ALTERNATOR INSTANTLY**. The "-" battery terminal **MUST** go to the tractor frame, and the "+" terminal **MUST** go to the Starter Solenoid. No exceptions.
  19. Tighten the battery terminals securely.
  20. Turn on ignition switch. The Side Marker Lamp "alternator light" should illuminate, indicating that the alternator is not charging. If the points in the distributor are closed, the ammeter should register about 4 amps discharge(-). If the ammeter indicates a charge (+) at this time, the connections on the back of the ammeter should be reversed. If the points are open, no needle movement should be observed at this time. The position of the points is not important at this stage, this is just a sign to look for to observe that things have proceeded normally.
  21. Start the tractor. The Alternator light should go out and the ammeter should be indicating a charge (+) indication. You may have to increase the engine RPM initially to get the alternator to excite and begin charging. If the alt. light goes out and the ammeter is indicating a discharge (-), simply reverse the connections on the back of the ammeter.
  22. ENJOY!!

## Wiring Diagrams

Here is a rear view of my tractor. On the dash below and left of the ammeter you can see the Side Marker Lamp alternator "idiot" light. The purpose of the light in the conversion is to



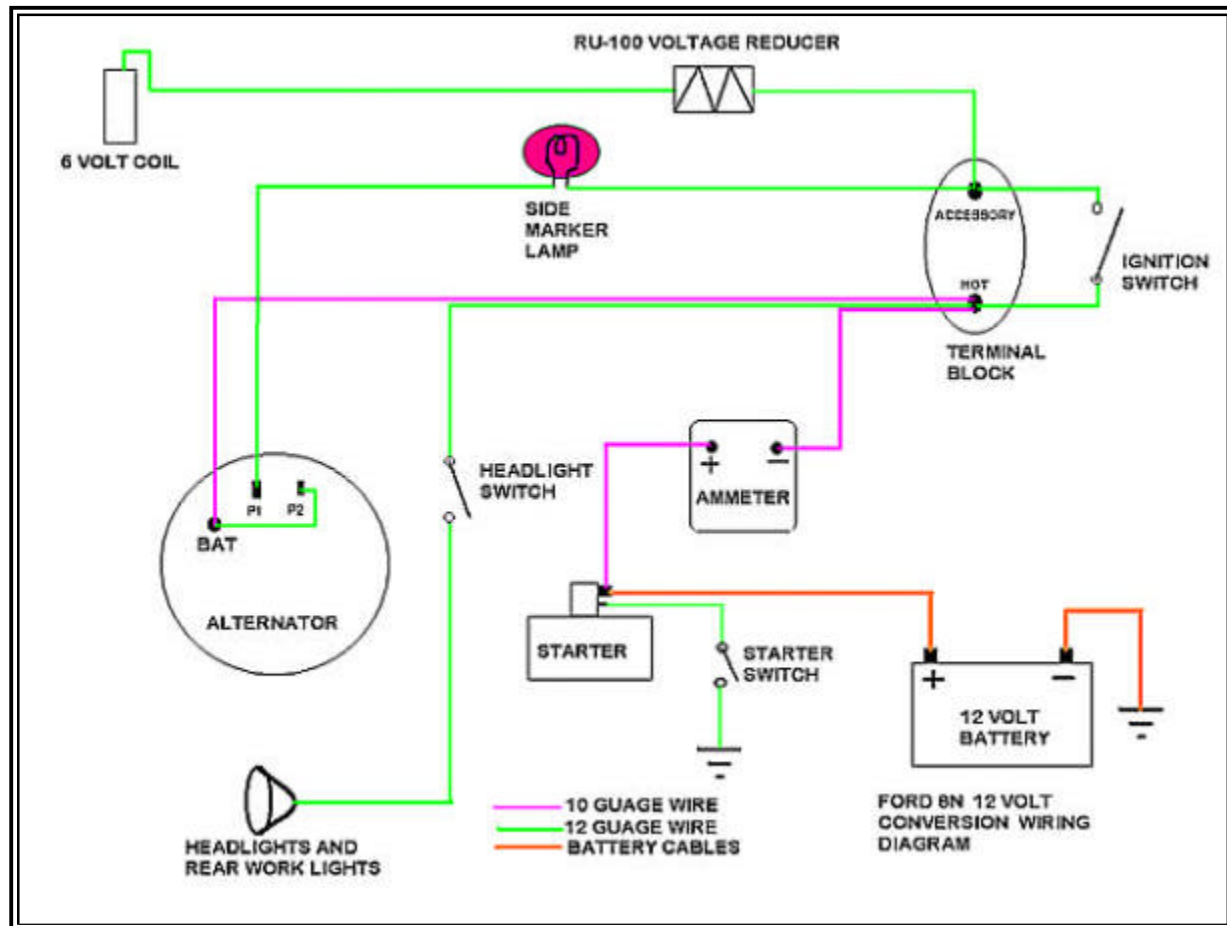
prevent the backflow if electricity in the excite circuit. If the light bulb is omitted from the conversion, the engine will continue to run even after the key is turned off due to the backflow of electricity from the P1 terminal on the alternator to the "ACCESSORY" post on the Terminal Block, and then out to the coil. For best results, use a lamp that utilizes the #194 (or #193) bulb. Initially, I used a small "indicator light" that installed through a single hole in the dashboard and had 2 spade connectors on the back, and was much smaller than the Side Marker Lamp. The drawback was that I had to rev the engine to nearly full throttle to get the alternator to excite and begin charging. I wasn't too thrilled about doing that each time I started the engine, so I went out and got the correct parts. If you desire, a 1 amp 50 volt diode can also be used in lieu of the light bulb.

If you have any questions, just [email me](#).

# FORD N SERIES

## 12 VOLT CONVERSION

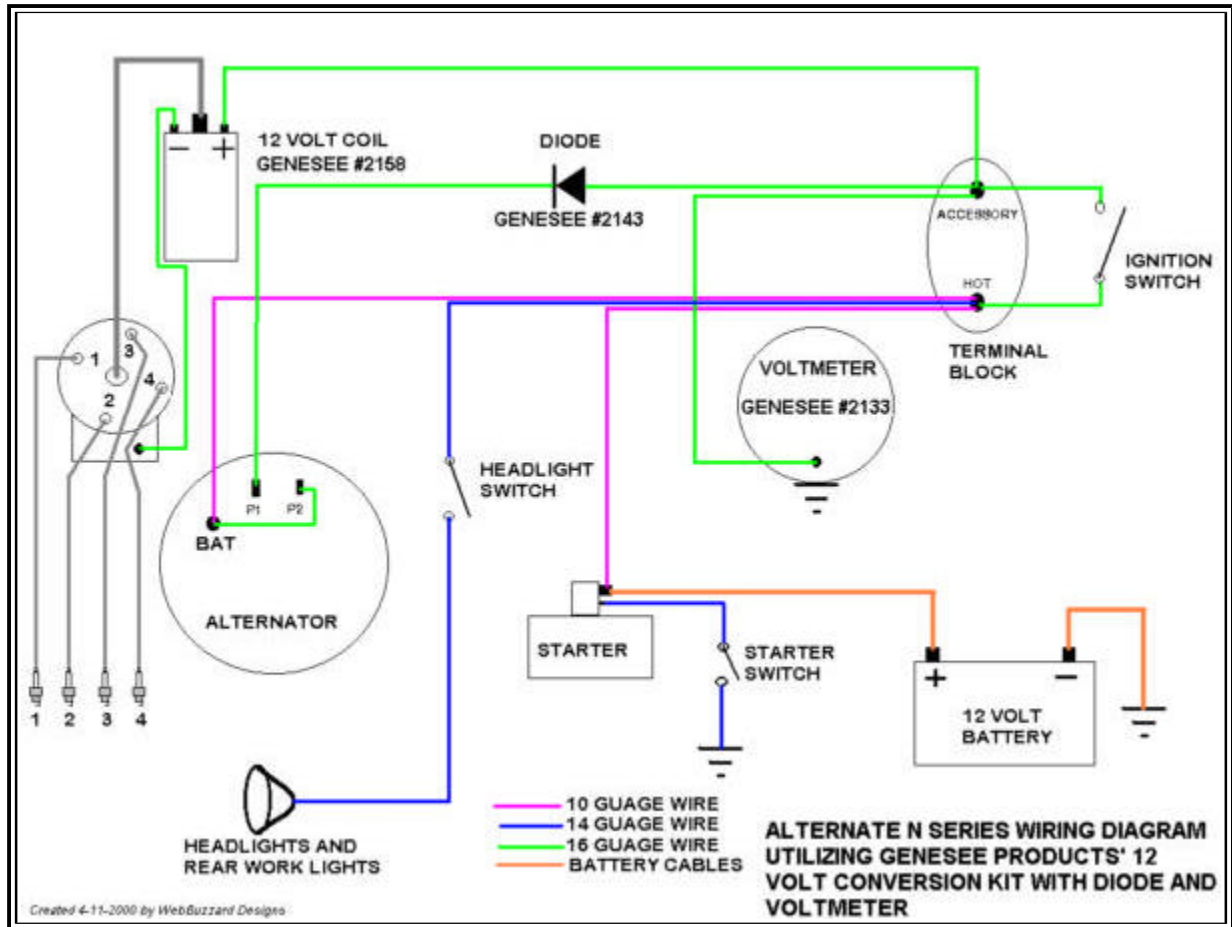
### WIRING DIAGRAM



The diagram above retains the stock 6 volt coil and uses the "Side Marker Lamp" in the field excite circuit (P1) as well as the original ammeter. Apparently, there are 2 styles of ammeter out there, the newer style which is depicted here with 2 terminals on the back of the unit, and the older inductive style which has 2 "loops" on the rear of the unit through which the 10 gauge wire from the main post on the starter solenoid to the "HOT" terminal on the terminal block passes. If you have the newer style ammeter, hook it up as shown here. If you have the older inductive style with the "loops", it may be necessary to reverse the direction of the wire through the loops to get the correct indication on the ammeter. For example, after you complete your conversion, you turn on the headlights with the engine OFF and observe a +CHARGE+ indication, you know then that the wire is running the wrong direction through the loops. To correct this, simply remove one end of the wire from its terminal, pull it out of the loops, and then re-run it through the loops in the OPPOSITE direction, then reconnect it back on its terminal. Simple as that!!

Below is an alternate diagram, which utilizes a diode in the P1 circuit instead of the "Side Marker Lamp" and a Voltmeter instead of the ammeter. This diagram also follows the commercially available conversion kits such as those sold by [Genesee Products](#). If you would rather purchase a Complete Ready to Go kit

instead of spending all the time gathering up all the parts yourself, call or [email](#) the folks at [Genesee Products](#) at (918) 274-8000 and they'll set you up right!



[BACK](#)

# Electronic Ignition Conversion

## For the Side Mount Distributor 8N Tractors



After converting my '52 8N to 12 volts, I decided I wanted to continue the modernization project for my tractor by installing an Electronic Ignition kit. I looked all over the 'web for kits for the 8N tractor, and finally found them available at [Genesee Products](#). After talking to the good folks there a couple of times about it, I made the decision to go ahead with the project, and ordered the 12 volt electronic ignition kit and a new 12 volt High Voltage coil.

Once the package arrived a few days later, I opened up the small shipping box and inside was the new coil and the box with the electronic ignition unit. I opened the electronic ignition box and dumped out its contents, and thought, "Uh oh, they forgot something, there has to be more to it than this." All that was in the box was the installation instructions, a plastic bag that had the ignition module and a black plastic "donut", and another small bag that had 2 crimp-on eye connectors and a couple of little screws. "Man, there has to be more to it than this!!" I thought. :-) I completely read the short installation instructions and verified that everything indeed was there, and thought to myself "This shouldn't be too hard to do. Maybe a couple of hours if everything goes OK."

Well, everything did go OK and I have to tell you it took a lot less than 2 hours to do the entire project. If it hadn't been for a stubborn, rusty, stripped-out screw holding in the old coil in it's holder, the entire job of replacing the coil and installing the electronic ignition module would have taken only about 45 minutes instead of the 1 hour and 15 minutes it took me. :-)

***Here's All There is to it!***

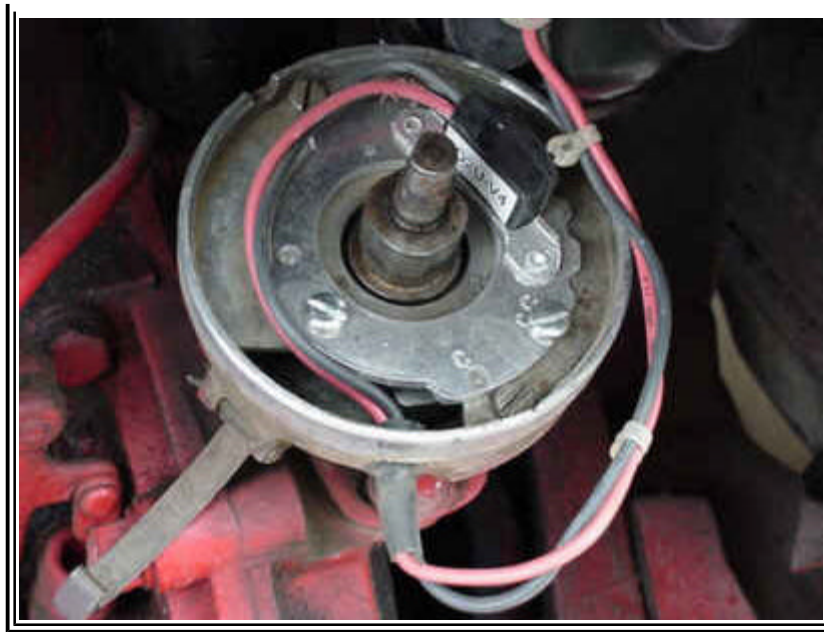




Here's a picture of my 8N with the original points installed, before the electronic ignition conversion.



First, begin by disconnecting the Positive (+) and Negative (-) cables from the battery. If you are running 12 Volts already, be sure to remove the Negative (-) cable first to prevent any sparks that may ignite the fuel vapors near the fuel tank. Then remove the distributor cap, the rotor, and dust cover. There's no need to remove the spark plug wires from the cap, just undo the clips holding the cap on the distributor, and move it out of the way. Then disconnect the wire from the coil that runs to the post on the distributor. Next remove the points and condenser, and remove the brass "post" where the wire from the coil connected and the phenolic insulator plug that the post ran through. You should now have the bare distributor in front of you.



Second, place the ignition module on the baseplate of the distributor and use the provided screws to mount it in the holes that were previously used by the points. Now run the 2 wires from the module through the hole where the post insulator that you removed earlier used to be. The rubber grommet pulls easily through the hole that the insulator was in. Pull the wire through the grommet and the hole enough so that they lay flat on the baseplate and won't interfere with the rotor once it is installed.

Third, measure the wire up to the coil. The RED wire attaches to a source of 12 Volt power. If you are using a 12 Volt coil with no external resistor like the High Voltage Coil from [Genesee Products](#) like I am using, then you can run the red wire up to the + terminal on the coil. If you are using a 6 Volt coil or a 12 volt coil with an external resistor, then you'll need to run the red wire up to the "Accessory" terminal on the terminal block to get 12 volt power to the module. The BLACK wire attaches to the - terminal on the coil. Measure the black wire up to the coil and cut off any excess wire, and install the crimp-on connector, and connect it to the - terminal on the coil.

*[Click here to see wiring diagrams for the electronic ignition installation!](#)*



Fourth, take the black plastic "donut" and slip it over the cam lobe on the distributor shaft. This "donut" contains the magnets that tell the module when to fire the coil.

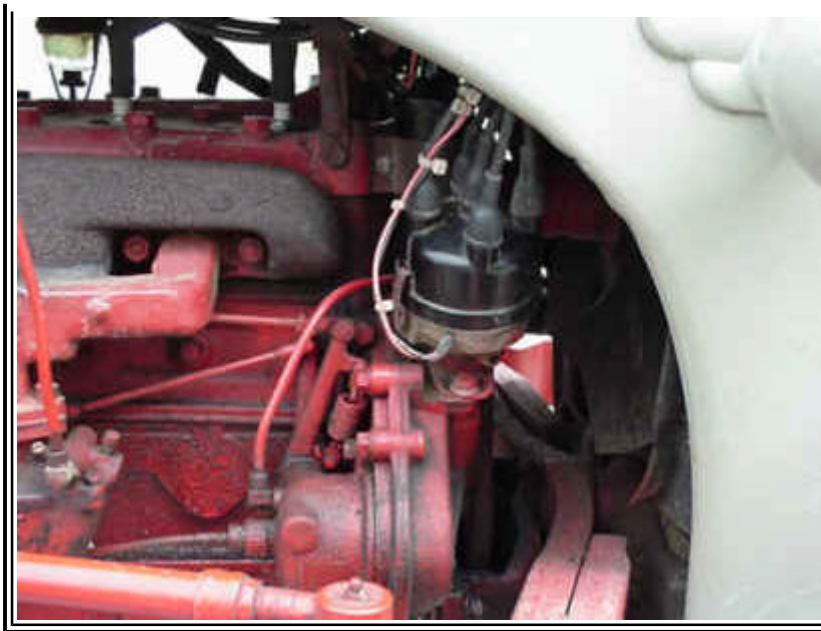


Here's the "donut" on the distributor shaft with the ignition module completely installed.



If your 8N has the dust cover, leave it off because it won't fit over the ignition module in the distributor. It doesn't matter though, because the module is completely waterproof and dust proof! If you are installing the electronic ignition on a NAA or later model tractor, you should reinstall the cover or else the distributor cap will not be at the correct height, and that could cause some problems. Next install the rotor.





Now reinstall the cap. Make sure you have it on the right way and not turned 180 degrees!! Secure the wires from the ignition module so they don't snag on any tree branches or ????. I used plastic tie wraps as you can see here. Now reconnect the battery cables, and you're done. Now START IT UP!!!

I about fell on the ground when I cranked the engine over and it started the very first time. It just sat there purring like a kitten! After I got the electronic ignition and the High Voltage coil installed, the first thing I did was put on the finish mower and start to mow the grass. I immediately noticed that the engine would continue to run right down to the point that it just stopped turning as I backed the tractor up to attach the mower. I can now leave the tractor at dead idle when backing up to attach implements without worrying that it will die as soon as the tractor starts to move. While mowing it also seemed that the tractor might have picked up 2 or 3 horsepower. One patch of grass that is really tough that always took some extra throttle to get through before, now just gets mowed right down.





If you have any questions about the electronic ignition conversion, just [email me](#) or [email the great folks at Genesee Products!!](#)



**Manual Sets on CD**  
© 2001-02 CD Presentation  
[www.ClassicManuals.net](http://www.ClassicManuals.net)

This manual was digitally reproduced by **Classic Manuals** WITH the authorization of the manufacturer or original manual copyright owner or it's successors. The manufacturer or original manual copyright owner or its successors are not responsible for the quality or accuracy of this manual.

Thanks